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Valvular Heart Disease

RELATIONSHIPS BETWEEN TRICUSPID REGURGITATION, ELEVATED PULMONARY PRESSURE AND RIGHT HEART REMODELING

Poster Contributions
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Background: Pulmonary hypertension (PH) is associated with functional tricuspid regurgitation (TR). However, TR is often found in the absence of PH, and right heart structural abnormalities result from the combination of TR and PH. The relationships between right heart structural changes, elevated right heart pressure and TR are not well described. We thus studied the impact of TR with and without PH on right sided heart structure.

Methods: The study evaluated 455 patients with both echocardiography and 3-dimensional computed tomography (CT). Cases were divided into 3 groups by TR severity: Group I, trace TR, n=217; Group 2, mild TR, n=174, and Group 3, moderate/severe TR n=64. Each TR group was subdivided into 2 subgroups (subgroup a: PH absent and subgroup b: PH present) by the presence or absence of PH, defined as PAP >40 mmHg. Six groups resulted. In each group measurements were made of the tricuspid annulus area and index (TAA), right atrium volume and index (RA) and right ventricular volume (RV) and index using CT images.

Results:
1) Significant TR (IIIa and IIIb) was associated with enlarged n-TAA, RA index and RV index compared with trace or mild TR, independent of PH presence/absence.
2) Mild TR (Groups IIa and IIb) in the presence of PH was associated with enlarged RA index compared to mild TR without PH.
3) Mild TR (Groups IIa and IIb) was not associated with n-TAA or RV index enlargement and was independent of PH presence/absence.
4) Trace TR (Groups Ia and Ib) was not associated with enlarged n-TAA and RV index regardless of PH presence/absence.
5) Trace TR (Groups Ia and Ib) in the presence of PH was associated with enlarged RA volume compared to trace TR without PH.

Conclusions: Right heart morphologic changes (tricuspid annulus, right atrium, right ventricle) are closely related to TR severity. Elevated pulmonary pressure alone does not increase right heart structures without concomitant TR. RA volume is most sensitive to elevated pulmonary pressure, as it alone is enlarged in trace TR. RA enlargement of any significant degree should warrant serious attention as it portends heart structural change.